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USPTO Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450
Attn: Group 2835
Examiner Gregory Thompson

RE: US2004/0252455A1

Dear Mr. Thompson,

The following remarks are with reference to Patent Application Publication number US2004/0252455A1, Kuo Yi-Lung inventor, Fenwick & West LLP correspondents (abstract attached).

This application fails the test for patentability by virtue of a profound lack of novelty. The inventor proposes to patent a cooling system for a computer *consisting of a single fan providing positive pressure to a chassis, and a number of air outlets in the chassis.*

The single fan, positive pressure architecture is ancient, dating to the early 1980s for electronic applications of all kinds, including the computer.

Consider the following:

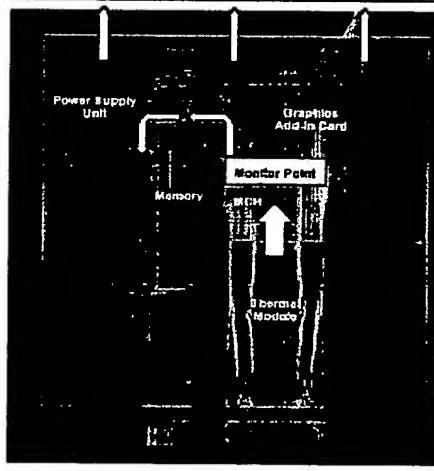
- (1) The Intel Corporation of Santa Clara, CA., first introduced the *single fan positive pressure system* in the mid 1990s for the "ATX" chassis specification. It consisted of a single fan cooling the power supply, motherboard, CPU, and all components in the system. The fan blew air *into* the chassis, providing *positive*

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pressure. Intake holes were provided for venting. Attached you will find ATX specification 2.01, copyrighted 1996, which emphasizes (see page 18) that the purpose of the single fan is to "draw in cool air from the outside" before venting it downstream of the processor and other components.

- (2) The Intel Corporation has recently *reintroduced* a version of this architecture in the form of the new "BTX" specification, which can be found at www.formfactors.org. The minimal configuration in this architecture is for a single dominant fan to provide positive pressure to the chassis by blowing first over the CPU heat sink, and then over the rest of the system (VGA, drives, power supply, etc.) The first illustration below shows the BTX system's thermal footprint with air input at the front and air egress at rear of the chassis. The second illustration shows the upstream location of the fan that cools the CPU first and then all other components in its wake. Notwithstanding a number of clever Intel tweaks, this is a basic positive pressure, single fan system, though much more sophisticated than the decades old Yi-Lung design. The BTX specification is 286 pages, so including it here is prohibitive. However, a full reading of the specification will illustrate the level of system detail and complexity that must be addressed by anyone who *claims* to add novelty to the area of chassis design against a backdrop of just how far the art has progressed.

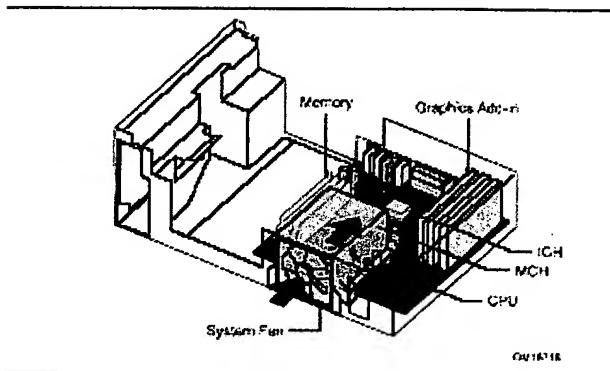
Figure 125: Typical BTX System Airflow Illustration



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The exact System Monitor Point location within the Thermal Module exhaust should be based on the location of the component whose temperature is closest to its specification in the operating condition evaluation outlined in Section 3.4.4.4.

Figure 13: Thermal Module Airflow Path



- (3) The positive pressure architecture is one of the three primitive topologies for cooling electronics, along with negative pressure and the combination of positive and negative pressure (the so called push-pull architecture). Attached you will find some drawings from common reference works illustrating the simple positive pressure architecture.
- (4) Prior art in the specific area of single fan, positive pressure computer cooling is abundant. Attached you will find United States Patent 6034870 as one example. It consists of a single fan cooling a computer using positive pressure. Other relevant references of not unrelated art are US 5701231, 5600538, 5586865, 5505533, 5473507, 5446619, and 4643245, as cited in 6034870. Also relevant are US5691883, which describes a single fan, positive pressure chassis, and US6813149, which provides still another example of a single fan, positive pressure system.
- (5) The market place is replete with examples of single fan, positive pressure computer cases. Attached are some photographs of computer interiors showing one intake fan and a number of downstream vents in the form of chassis holes. While the examples are taken from current product offerings by Linkworld Electronics and Silverstone, these examples are the tip of a deep iceberg. These cases are sold empty and are typically used for

positive pressure only applications, or push pull cooling schemes

Reference material associated with the above is attached to these remarks in the form of sections labeled I through V.

For the "inventor" to claim originality several hurdles must be overcome: (1) it must be demonstrated how his "invention" is superior to prior art; (2) it must be demonstrated how his invention is different from the ubiquitous and generic art found in today's market place; (3) it must be demonstrated how a single fan chassis can overcome the significant *back pressure* of a fully populated chassis and provide enough operating (net) CFM to cool the system; (4) it must be demonstrated that item #3 can be accomplished without noise in excess of at 30 dbA (*worst case specification*) for office, school and home applications; (4) it must be demonstrated how items #3 and #4 can be accomplished while *simultaneously* satisfying FCC B and European CE standards associated with unintentional radiators; (5) it must be demonstrated – assuming adequate net airflow has been achieved – that the direction and velocity of the air flow is adequate to cool *individual* components in the *wake of heat from the processor*; and, finally, (6) it must be demonstrated that the single intake fan that provides positive pressure to the system is not defeated by - and is balanced with - what may inevitably be a second fan in the power supply; or, assuming a fan-less supply, it must be demonstrated how a single fan, positive pressure system can cool a modern CPU + video card + hard drives(s) + 5.25 drive(s) + RAM + mother board regulators + North and Southbridge chips + power supply in the range of .5 to 1 KW total system load.

It should be noted that the more recent examples of prior art cited above assume the single fan, positive pressure chassis as a baseline specification, and then attempt to add value by *solving* one or more of the above problems.

It is difficult to understand how anyone with a background in designing computer-cooling systems could imagine that a single fan, positive pressure system with some vent holes was novel or patentable. Not only is Kuo Yi-Lung's patent application not novel, but it shows a profound ignorance of prior art, an unawareness of generic popular art common to today's market, and an utter absence of familiarity with those problems that would have to be *solved before*

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novelty could be claimed. As a professional engineer, and as someone skilled in the art, I am at a loss to know how such a primitive re-tread of a ancient idea – absent a new discussion of an original and added value *means* - can solve the above cited system issues

The application is without a trace of merit and should be rejected; it does not even come close to meeting the threshold test of novelty.

To be completely candid, this is the kind of application that should be never be allowed get to this point: it clogs the system, wastes the examiner's time, and does injury to others whose applications have merit (and for whom time may be of the essence).

Thanking you for your patient consideration, I am

Sincerely,

A handwritten signature in black ink, appearing to read "Victor R. Spelman". The signature is fluid and cursive, with a long horizontal line extending from the end of the "e" in "Spelman".

Victor R. Spelman

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(19) United States

(12) Patent Application Publication

Yi-Lung

(10) Pub. No.: US 2004/0252455 A1

(43) Pub. Date: Dec. 16, 2004

(54) COMPUTER COOLING SYSTEM WITH FAN

Publication Classification

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(21) Appl. No.: 10/767,415

(22) Filed: Jan. 28, 2004

Related U.S. Application Data

(60) Provisional application No. 60/456,643, filed on Mar. 20, 2003.

(51) Int. Cl.⁷ G06F 1/20

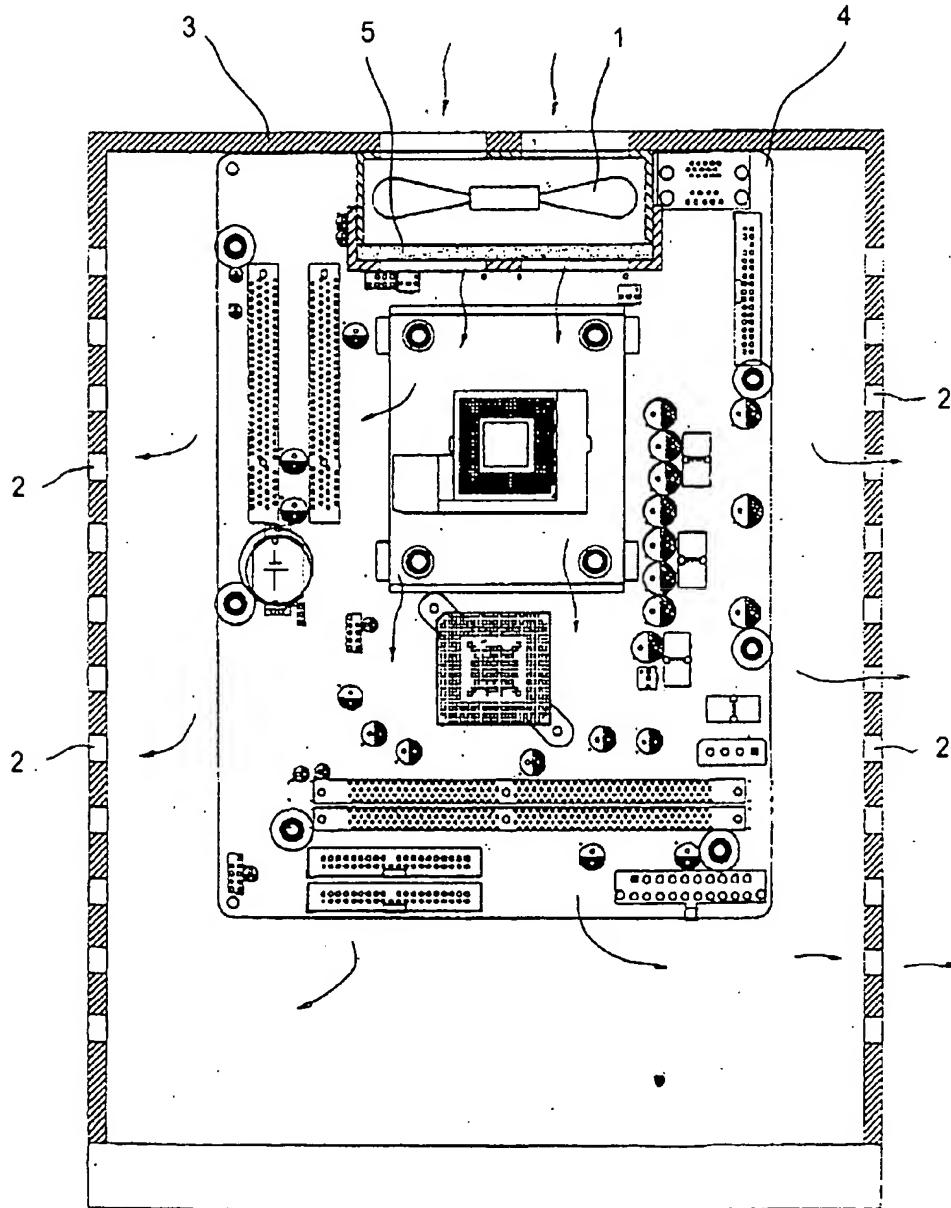
(52) U.S. Cl. 361/687

Gregory Thompson.

(57) ABSTRACT

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To dissipate heat generated by components inside a personal computer, a fan is configured to blow cool air from outside a computer chassis to components on the inside of the chassis. The air is heated by the components and exits the computer chassis through a number of air outlets in the chassis. The fan can be mounted, for example, on a wall of a computer chassis, and may have a filter in the airflow path to remove particles in the air before it enters the chassis.



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